

# Washington State On-Site Wastewater Technical Review Committee

## Minutes for the October 9-10, 2002 Meeting

Approved on December 4, 2002 by Vote of the  
Committee



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**Note:** The minutes periodically refer to “Items.” Items are documents containing information on a subject being discussed. Items, with their descriptions/titles, are noted at the end of the minutes in the section entitled “List of Meeting Materials.

## MEETING ATTENDEES

### Members Present

1. Kevin Barry, Eastside Env. Hlth
2. Pam Denton, LHJ Field Staff
3. Scott Jones, Engineers
4. Melanie Kimsey, Dept of Ecology (Day 1)
5. Eric Knopf, Designers, Installers, O&M
6. Glenn Herriman, Wash. Assoc. of Realtors
7. Tom Rogers, Proprietary Devices
8. Mike Vinatieri, Westside Env. Hlth

### DOH Staff

1. Jane Lee, Wastewater Mgt. Program
2. Kelly Cooper, Wastewater Mgr. Program
3. John Eliasson, Wastewater Mgt Program
4. Selden Hall, Wastewater Mgt Program
5. Dave Lenning, TRC Coordinator

### **Guests Who Signed In or Presented**

1. Richard Newcomb, Advanced Drainage Systems (Day 1)
2. Phillip McDonnel, Hancor (Day 1)
3. Duff Little, Spokane Regional Health Department
4. David Riggs, Wahkiakum Health Department
5. Peter Lombardi, Orenco Systems Inc. (Day 1)
6. Stephen C. Wecker, Onsite Consulting Services
7. Keith Grellner, Bremerton-Kitsap Health (Day 2)
8. Alex Mauck, EZ Lay/Drain, (Day 1)
9. Michael Lloyd, EZ Lay/Drain, (Day 1)
10. Gifford Brown, Infiltrator Systems Inc. (Day 1)

## **INTRODUCTION**

Tom Rogers, Chair, called the meeting to order at approximately 10:25 a.m. on October 9, 2002 and at 8:20 am on October 10, 2002 in the meeting room of the BEST Inn in Ellensburg. The meeting on Day 1 began with brief introductions by each committee member, DOH staff, and the interested parties in the audience. Glenn Herriman, the new Washington Association of Realtors representative on the TRC, was introduced.

## **MINUTES**

**August 14-15, 2002 Meeting Minutes Adoption** – By unanimous vote, the committee approved the August 14-15, 2002 TRC meeting minutes without changes.

## **ADMINISTRATIVE MATTERS**

- Dave Lenning reported on the Rule Development Committee process and the TRC report that had been presented at the September RDC meeting. Melanie Kimsey expressed her concern that the RDC was going to discuss all the technical matters presented by the TRC all over again. Time does not exist for that. Steps need to be taken to help the RDC be more willing to accept TRC recommendations.
- The schedule of meetings for the first half of 2003 was established and confirmed: **February 5-6, April 9-10, and June 11-12.**

## **SUMMARY OF TECHNICAL DISCUSSIONS**

### **1. Summary of changes to the Aerobic Treatment Unit RS&G**

- a. Dave Lenning presented Laura Benefield's report on changes that were being made to the current RS&G for aerobic treatment units. These changes are necessary due to TRC decisions made during meetings over the last 18 months. See **Item 1.**

- b. Tom Rogers questioned whether we were talking about effluent or influent. The committee decided we were talking about ATU effluent being ready for disinfection (disinfection influent).
- c. Eric Knopf stated as the use of CBOD, instead of BOD, is promoted more, we must be sure we give as much information as possible, such as conversions between CBOD and BOD to help simplify the transition to CBOD.
- d. Mike Vinatieri suggested work is needed on sampling methodology.

## 2. Clarification of Language in the Gravelless System RS&G

- a. Dave Lenning indicated that questions had been received about how to specifically determine the effective area to be used for sizing drainfields using chambers. **Item 2** contains the discussion document sent to the committee members:
  - Subsection 3.5.1(b) on page 13 states: **“Gravelless chamber drainfields – Calculate the required length of chamber using the effective area for the particular chamber. The effective area per lineal foot of chamber is based upon the actual dimensional width of the chamber at the trench or bed bottom, not the nominal size or product marketing description.”**
  - Note at top of listing of chambers in the “List of Approved Systems and Products”: **“Infiltrative surface area is calculated from outside dimensions. Actual area may be less for some products due to support pads and dimensional variation.”**
- b. Because of the above language, questions on what was intended have been asked and some confusion has resulted.
- c. The committee was asked about its intentions and conclusions regarding the effective area to be used for sizing chambers: actual interior exposed area (inside wall to inside wall), outside dimensions (outside wall to outside wall), nominal dimensions (not to be used according to current RS&G), or other.
- d. Discussion included:
  - Gif Brown – gravel gets credit for 3 square feet of effective area for a trench three feet wide with gravel in contact with the soil over the entire trench width. Chambers should be dealt with equally.
  - Kevin Barry and others responded to Mr. Brown that his reasoning was the reason why chambers obtained the reductions they have.
  - Dave Lenning offered the idea of making the designers responsible for making the decision and that the manufacturers should be working with them. Committee members indicated they had concerns placing the responsibility on the designers and manufacturers. They recommended that the department continue to include the detailed sizing information in the “List of Approved Systems and Products.”
- e. **Motion:** The effective area used for sizing should be the actual exposed inside area, that is the interior dimensions of the chamber from inside sidewall to inside sidewall – made by Kevin Barry  
**Second:** Mike Vinatieri  
**Vote:** Unanimous in support of the motion
- e. Resulting language to be placed in the RS&G is: Subsection 3.5.1(b) on page 13: **“Gravelless chamber drainfields – Calculate the required length of chamber using the effective area for the particular chamber. The effective area per lineal foot of chamber is based upon the actual exposed interior dimensional**

**width of the chamber at the trench or bed bottom, not the nominal size or product marketing description.”**

### **3. Performance Testing Protocol – A comparison**

- a. Dave Lenning presented a report developed by Laura Benefield (using a PowerPoint presentation Laura developed) comparing the protocol from the following performance testing protocol: NSF Standard 40 and the Environmental Testing Verification (ETV) protocol for biological, non-biological and nutrient reduction processes. **Item 3** includes the handout material for this discussion. The presentation included the following key points:
  - Where the department has regulatory authority, the testing protocol must be placed into rule.
  - The department currently reviews testing protocols where one is not specified.
  - Information on the history for the various testing protocol was presented.
  - Summaries of the features for the various protocols were presented including information on: the gallonage limitations, influent and effluent requirements, sampling requirements, and whether 30-day averages are obtainable or not.
  - The conclusions included:
    - NSF Standard 40 could be used for CBOD<sub>5</sub>, TSS and nutrient reduction for flows #1500 gallons per day supplying 30-day averages, though the frequency for nutrient samples would have to be determined.
    - For residential flows, ETV protocol could be used for flows >1500 gallons per day, as NSF Standard 40 doesn't test systems above 1500 gallons per day. However, 30-day averages are not attainable, especially for the ETV biological and nutrient reduction protocol.
  - For commercial or high strength waste flows, ETV protocol could be used, though 30-day averages are not attainable. NSF Standard 40 cannot be used for commercial or high strength waste flows.

### **4. Technical Issue 6 – Type 1 soils**

- a. John Eliasson presented information on the current status of this issue and reminded the committee of the revisions to Table V of WAC 246-272 that would occur if the committee decisions made up until now were implemented. **Item 4** includes information related to this discussion.
- b. John Eliasson suggested that gravelly coarse sands and very gravelly coarse sands should be included in type 1 soils.
  - **Motion:** Kevin Barry - gravelly coarse sands and very gravelly coarse sands be included in type 1 soils.
  - **Second:** Mike Vinatieri
  - **Vote:** Unanimous in support of the motion
- c. Pam Denton indicated she was concerned with coarse and medium sands being lumped together in the same soil type. Currently, they are separate and require different types of effluent distribution in most cases. Duff Little concurred with the concern.
  - **Motion:** Eric Knopf – Move medium sand to type 3 soils
  - **Second:** Pam Denton
  - **Vote:** Unanimous in support of the motion

- d. There was discussion about the use of CBOD. There was a suggestion that CBOD and BOD be defined in the rule and that a rough relationship between them be defined.
- e. John Eliasson suggested that an upper limit for CBOD needed to be added to the hydraulic loading rate chart for septic tank effluent.
  - **Motion:** Scott Jones – In the hydraulic loading rate table, the rates for septic tank effluent should apply to effluent with a  $CBOD_5 > 25$  mg/L and  $=200$  mg/L
  - **Second:** Kevin Barry
  - **Vote:** Unanimous in support of the motion
- f. Tom Rogers stated his concern that some homes may have a  $CBOD_5$  of greater than 200 mg/L. He asked whether such homes are being set up so the revised hydraulic loading rate table would not apply.
- g. Duff Little indicated his concern with the restriction about using soils with a platy structure (in the proposed footnote). Systems installed in soils with a platy structure in his county are functioning satisfactorily. The resulting suggestion was that the footnote should only prohibit moderate and strong platy structures.
- h. Discussion ensued about how the unsuitable soils should be specified.
  - **Motion:** Melanie Kimsey – Add a Soil Type 7 and list all of the unsuitable soils, including those characteristics now in footnotes. The loading rate is zero.
  - **Second:** Kevin Barry
  - **Motion:** Unanimous in support of the motion

## 5. Technical Issue #1 – Treatment Standards 1 # 2

- a. Melanie Kimsey discussed concerns for nitrates in ground water, decisions that relate to lot size and application strategies for treatment levels. Her key points included:
  - Over 60% of Washington residents get their drinking water from ground water
  - 95% of fresh water is ground water
  - When looking at on-site wastewater systems, we need to be aware of how ground water quality can be adversely affected by the systems
  - Only 40% of the state has some kind of protection for groundwater via one of the following mechanisms: sole source aquifers, critical aquifer recharge areas, groundwater management areas, or well head protection zones
- b. Kevin Barry suggested that local health jurisdictions probably are the best source of information on ground water quality and nitrates, especially those jurisdictions that have laboratories.
- c. John Eliasson discussed his revised strategy for applying treatment levels. He indicated he has talked to Department of Health staff working in the drinking water, shellfish, and recreational water areas. **Item 5** includes the information summarizing the committee's current decisions on treatment levels and his ideas on applying them.
  - He has developed a draft site susceptibility rating for the various soil types and depths
  - He then developed a draft set of special resource areas and specific treatment levels that could apply to each

- d. Duff Little questioned the depth of a deep aquifer. John indicated that the Department's drinking water staff indicated an extremely deep well is 250 feet deep. Kevin Barry indicated he thought that was a relatively good number.
- e. Dave Lenning presented a quick summary of a scheme being developed by Mark Soltman. **Item 6** is a concept draft developed by Mark **for discussion only** that relates Mark's ideas by applying a value system for the different variables.
  - The committee liked the concept but there was concern about the subjectivity of some of the items, such as some of the special resource areas.
  - They liked the idea that it included management and lot sizes
  - They liked the idea that it provided a "reward" where, for example, management was provided and where lot sizes were larger.
  - There were concerns stated about the ability to develop a "cutting-edge" concept like this in the time frames available for completing the revision of the regulations.
- f. The committee unanimously suggested that work continue on both concepts. Tom Rogers suggested that 3-4 examples be developed and that each concept be used to see how they work. He would like this for the next meeting.
- g. John Eliasson talked briefly about the treatment levels. He suggested that maybe an intermediate level for fecal coliform between  $10^4$  and 200 fecal coliform/100 ml be developed. He suggested  $10^3$ .
- h. Mike Vinatieri reiterated a concern from past meetings where we're depending on many systems to be meeting the current treatment standards. Many systems are not meeting those standards. He was not so concerned with the fecal coliform counts as long as we had appropriate vertical separation.

## Day 2, October 10, 2002

### **6. Technical Issue #1 – Treatment Standards 1 & 2 (continued discussion)**

- a. The nitrogen "add-on" standard was discussed. The 5 mg/L total nitrogen standard was questioned. Discussion centered on what a good practical number would be.
  - **Motion:** Kevin Barry – the total nitrogen standard be 20 mg/L
  - **Second:** Eric Knopf
  - **Vote:** Unanimous in support of the motion
- b. Further discussion ensued on what the fecal coliform counts in the standards should be:
  - John Eliasson – we need to be concerned with virus attenuation
  - Kevin Barry – maybe use  $10^4$  for regular vertical separation and sizing and  $10^3$  when reductions in vertical separation and/or sizing are used
- c. The draft total phosphorus standard was discussed. Everyone agreed that phosphorus did not pose a public health threat.
  - **Motion:** Tom Rogers – The "add-on" standard for phosphorus be deleted
  - **Second:** Kevin Barry
  - **Vote:** Unanimous in support of the motion

### **7. Technical Issue 7A – Lot sizes (Minimum land area)**

- a. Selden Hall related his findings from a survey of regulations from other states. **Item 7** contains the results of his survey. His key points were:
  - He mentioned the methodology he used in the search and the 10 key words or phrases he used.
  - The regulations of 25 states, including Washington, contained one or more of the key words.
  - The other 25 states either did not address minimum lot sizes or did not contain any of the key words.
  - 11 states require ½ acre or more for lots served by individual wells.
  - New Mexico links lot size to design flows.
  - Other factors various regulations related to the minimum lot size issue included: minimum frontage, minimum lot width, minimum area excludes area used for buildings/easements/rights-of-way/other features, related to disposal area only and the conditions that apply to it.
- b. Selden, Melanie and Dave will try and get information on the current status of water quality in Washington State, especially with regard to nitrates, and report back at the next meeting

## **8. Technical Issues #12A & #20 – Failing Systems & Table VI Repairs**

- a. Selden Hall gave a PowerPoint presentation discussing the key points from his research paper (**Item 8**):
  - There are definitions of “failure” both in WAC 246-272 and RCW 70.118. The RCW definition includes “Effluent ... threatens to contaminate a ground water supply.”
  - There are a variety of causes of failure. Early researchers are finding the same causes as are being found today.
    - There are many potential causes. Many failures have more than one factor present.
    - Improper appraisal of receiving soil and other site conditions.
    - Undersized absorption area.
    - Sidewall to bottom area ratio is ignored.
    - Poor construction practices.
    - Lack of intermittent dosing and resting.
    - Roots clogging distribution lines.
    - High ground water.
    - Lack of maintenance.
    - Baffles and screens missing.
    - Use of seepage pits and cesspools.
    - Owner/user life style (added by Eric Knopf)
    - Landscaping techniques (added by Pam Denton)
- b. Several observations were made about rates of failure
  - Several models exist.
  - Reported failure rates and age at time of failure are highly variable among investigators.
  - Keys’ model predicts system lives of 7 and 9 years in sand loaded at 1.0 and 0.39 gal/ft<sup>2</sup>/day, respectively.
  - Sherman et. al. found the average age of a system at the time of failure to be 18+ years.
- c. Selden made several observations on repairs:
  - Not much is in the literature that speaks specifically to repairs.

- Wecker et. al. made a crucial point: analysis of a failure for the cause of failure should be done before attempting a repair.
- Harkin et. al describe the use of hydrogen peroxide to renovate clogged drainfields, a procedure that has since been discontinued because of short-term benefits and long-term adverse effects.
- d. His literature research indicated several recommendations about the prevention of failures:
  - From early researchers
    - Use multiple compartment septic tanks
    - Use screened baffles
    - Use adequately sized absorption areas
    - Dosing and resting should be part of the design
  - Do soil evaluations during season of highest water tables
  - The design should be done by knowledgeable professionals
  - Maximize the sidewall to bottom area ratios
  - Divide the infiltrative area into at least two sectors, each sized for the design load
  - Minimize the clogging materials
  - Maintain 2-3 feet of vertical separation
  - When using sand media for fill, the media must meet the media specification
  - Avoid smearing and compaction during construction
  - Installation should be rigidly controlled and supervised
  - The septic tank should be monitored and pumped when necessary
- e. Selden asked the question, “Why is this an issue for rule development?”
  - Need to determine what is needed to repair a failure where soil/site conditions do not allow a conforming system
  - Questions remain about the application of Table VI repairs to situations where the soils were shallow but the horizontal setback was greater than 100 feet. The table needs to be changed.
- f. When using dye testing, the presence of dye indicates a hydraulic connection, but does not necessarily indicate inadequate treatment. An accompanying bacteriological sample is necessary to show that.
- g. Selden asked whether cesspools and seepage pits were failures. He explained the current regulations do not classify them as failures unless the definition of failure is met. The current EPA manual considers them outdated and under performing. Also, the current regulation does not permit local health jurisdictions to permit them (only seepage pits can be permitted and then as part of a repair only).
- h. Selden then talked about sampling methodologies/protocols for repairs.
  - Grab samples for performance monitoring have little meaning
  - Regular monitoring and timely maintenance are a better use of time and money
- i. Discussion among committee members and interested parties then ensued:
  - Keith Grellner - they will first look at trying to fix problem by fixing the part that is failing. This gives time to plan for a full repair if needed down line. This can help save money, as well as allow delays until the soil/site conditions allow installation of a full repair.
  - Pam Denton – More time is spent on evaluating a failure for cause for newer systems than is spent on older systems.
  - Keith Grellner – Regulations must leave options so designers and local government have some flexibility in getting problems resolved.

- Kevin Barry – There are concerns with things like getting access to property to find and fix problems. He has not heard many complaints about what the current WAC says about failures.
- Pam Denton – There is a concern about the inconsistency in the current WAC between lots close to water and lots back from the water
- Keith Grellner – he doesn't see a need for the current Table VI. This was followed by a general discussion about the need for Table VI ranging from deleting it to using Tables IV and VI together with waivers to making Table VI more stringent and including horizontal setbacks of more than 100 feet.
- There was discussion on the use of dye and what the accompanying bacteriological counts should be. Comments included:
  - Use 200/100 ml, which is the same for recreational waters and secondary treatment
  - Kitsap County uses 500/100 ml (Keith Grellner)
  - Mason County currently uses only a dye test (Pam Denton)
  - Something pertaining to dye testing and any accompanying bacteriological test maybe should be added to the definition of failure
  - Nutrients maybe should also be added to the definition of failure
- Kevin Barry – There are other uses for sampling protocol, specifically sampling to help diagnose a problem or to verify a failure. He suggested that this not be placed in rule, but in an RS&G.
- There was a recommendation that:
  - The current WAC definition of failure should remain.
  - The current WAC language in the design section about local jurisdictions shall not permit cesspools and seepage pits should remain.
  - Remove from the current WAC language in the design section allowing seepage pits to be used for failures.
- The committee agreed:
  - Table VI must have the loopholes removed.
  - Work on treatment standards and levels and their application need to be completed prior to making final decisions on repairs and Table VI.

#### **9. Presentation of Information on Gray Water Reuse and Outlet filters**

- a. Dave Lenning presented handouts summarizing what other states are doing on gray water reuse (**Item 9**) and septic tank outlet filters (**Item 10**).
- b. He indicated further discussion on these topics will be held at future meetings.

### **ADMINISTRATIVE/OTHER ISSUES**

1. The next meeting will be at the same location in Ellensburg on December 4-5, 2002
2. The meeting was adjourned

### **MEETING MATERIALS<sup>1</sup>**

#### **Meeting Agenda – October 9-10, 2002**

**Item #1 – Update: Recommended Standards and Guidance for Aerobic Treatment Units –**  
submitted by Laura Benefield

**Item #2 – Clarification of intent in Gravelless Drainfield RS&G** – submitted by Dave Lenning

**Item #3 – Comparison between the Testing Protocol Methods of the NSF Standard 40 and ETV Programs** – submitted by Laura Benefield

**Item #4 – E-mail messages between John Eliasson, Craig Cogger and Lisa Palazzi** – submitted by John Eliasson

**Item #5 – Tables pertaining to treatment standards and draft methodology for applying them** – submitted by John Eliasson

**Item #6 – Concept Document for alternative procedure for applying treatment levels** – submitted by Mark Soltman

**Item #7 – Summary of Minimum Lot Size in Other States** – submitted by Selden Hall

**Item #8 – Research Report for Technical Issues 12A and 20 (Failures and Table VI Repairs)** – submitted by Selden Hall

**Item #9 – Summary of how other states deal with gray water reuse** – submitted by Dave Lenning

**Item #10 – Summary of Septic Tank Outlet Filter Requirements from Other States** – submitted by Dave Lenning

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<sup>1</sup> All listed meeting materials are maintained by the Department of Health in a meeting manual entitled: *Technical Review Committee Meeting, October 9-10, 2002*. For further information, please contact the Department of Health's Wastewater Management Program at (360) 236-3062.